Liposuction of the zygomatic arch area facilitates correction of temporal depression

Chun-Hu Wang[1], Zi-Rong Li[2], Xin Li[1], Jie Li[1], Meng Wang[1], Xue-Bing Liang[1], Xiao-Ning Yang[1], Ke-Ming Wang[1], Ji-Guang Ma[1], Fa-Cheng Li[3]

[1]17th Department of Plastic Surgery, Plastic Surgery Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100041, China; [2]Department of Plastic Surgery, Peking Union Medical College Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100730, China; [3]18th Department of Plastic Surgery, Plastic Surgery Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100041, China.

To the Editor: Temporal depression is characterized by height difference between temporal concavity and lateral projection of the zygomatic arch. The aim of correction of temporal depression is to decrease the height difference between the concavity and lateral projection. In this study, we investigated whether decreasing the projection of the zygomatic arch by liposuction would benefit for correction of temporal depression.

The present study was approved by the Ethics Committee of the Plastic Surgery Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College, China. Patients signed an informed written consent form. We reviewed the data of 20 female patients with 40 instances of temporal depression who underwent facial contouring using fat grafting between November 2015 and November 2018 in the Plastic Surgery Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College, China. All procedures were performed by three, certified plastic surgeons, all very experienced in both liposuction and fat grafting. The patients were divided into two treatment groups according to the operative procedure: ten patients in group GL underwent fat grafting and liposuction to projection of the zygomatic arch and ten patients in group G underwent only fat grafting.

The zygomatic arch zone was marked as the zones for liposuction in group GL. Temporal depression was marked as the zones for fat grafting

In group GL, facial contouring was performed by fat grafting combined with liposuction of the zygomatic arch zone. In group G, contouring was performed only by fat grafting. The most common donor site for the fat grafts was the abdomen, but sometimes the thigh or arm was used. The tumescent solution was infiltrated into the donor site 10 min before liposuction. A 20-mL syringe and a blunt 3-mm cannula with multiple holes were used to harvest fat from the deep layer only. The lipoaspirate was filtrated by gauze and cotton pads. The filtered fat was transferred into a 1-mL syringe for injection. For group GL, liposuction to zygomatic arch zone was performed before fat grafting. The zygomatic arch zone was treated with small amount of tumescent solution, and a 5-mL syringe with a blunt, 1-mm cannula with multiple holes was used to extract fat from the superficial layer. For both two groups, tumescent solution was injected into the temporal depression, and filled the depression completely, then recorded the volume of injection. A blunt, 1.5-mm cannula with a single hole was used for the facial injection of the fat graft. Injections in the temporal area were 30% more than the volume of tumescent solution.

The amount of extracted fat from donor sites, and the amount of fat grafted to the temporal depression were recorded for all patients. In group GL, the amount of fat extracted from projection of the zygomatic arch was also recorded. The surface areas of temporal depression in frontal photographs before and after operation were measured with Image J software, 1.46r (National Institutes of Health, Bethesda, MD, USA) [Supplementary Figure 1, http://links.lww.com/CM9/A251].[1,2] After at least 6 months, the post-operative effects of all patients were evaluated subjectively by the patients themselves and three plastic surgeons. Patient satisfaction was scored using the following grades: 1 (very dissatisfied), 2 (dissatisfied), 3 (satisfied), and 4 (very satisfied) as defined by Doghaim *et al*.[3] Primary improvements in temporal depression were evaluated by the three plastic surgeons using the Global Aesthetic Improvement Scale as follows: 0 (worse), 1 (no improvement), 2 (improved), 3 (much improved), and 4 (very much improved).[3] Data are

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Correspondence to: Dr. Ji-Guang Ma, 17th Department of Plastic Surgery, Plastic Surgery Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College, Badachu Road, No. 33, Shijingshan District, Beijing 100041, China
E-Mail: majiguang@psh.pumc.edu.cn

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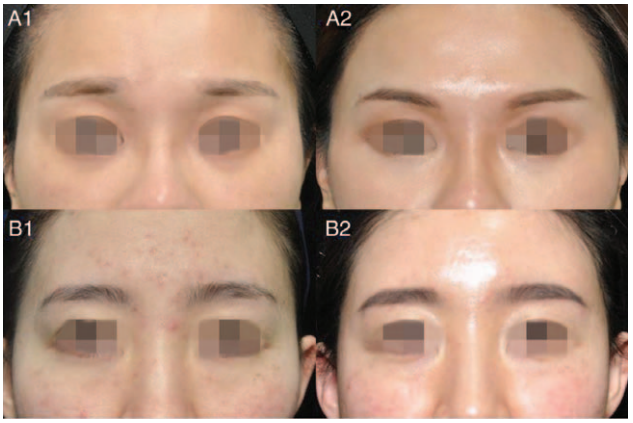

Figure 1: Some subcutaneous fats were extracted from the projection of the zygomatic arch and grafting fat was injected into the each side of temporal depressions (A1 and B1). One year later, the temporal depression was improved (A2 and B2).

presented as mean ± standard deviation. GraphPad Prism 5 (GraphPad Software, San Diego, CA, USA) was used for statistical data analysis. Statistical differences were analyzed by non-parametric test as indicated. A value of $P < 0.05$ was considered statistically significant.

No major complications, such as infection, cysts, or edema, were observed in any of the patients. The volume of fat grafted to the temporal depression was significantly less in group GL. The injecting fat on temporal depression was 2.0 ± 0.1 mL in group GL and 2.9 ± 0.2 mL in group G ($P < 0.001$). There was no difference in subjective satisfactory score between the two groups. The Global Aesthetic Improvement Scale score as evaluated by the three plastic surgeons showed no difference in improvement in temporal depression between the two groups [Figure 1]. The temporal depression in frontal photo before operation was found 37.5 ± 3.8 cm^2 in group GL, and 36.9 ± 3.2 cm^2 in group G ($P > 0.05$). The temporal depression in frontal photo was 16.1 ± 4.0 cm^2 in group GL and 17.0 ± 3.3 cm^2 12 months after operation. A statistically significant difference was found between the pre-operative and post-operative depressions on both sides ($P < 0.05$). The post-operative *vs.* pre-operative percentage of temporal depression area showed no differences between groups ($P > 0.05$).

At a practical level, facial liposuction and fat grafting must be performed cautiously.[4] Liposuction should be limited to the superficial subcutaneous fat with low negative pressure and a curved blunt cannula, to prevent a neuroprxia from injury to the underlying nerves or irregularities in the local contour of the region. The subcutaneous layers are good choices for fat injection into the temporal depression.[5]

Compared with fat grafting only, the combination of liposuction and fat grafting to correcting temporal depression has two advantages. First, less fat is needed avoiding of overcorrection and big face contour. Second, the protrusion of zygomatic arch is slightly lowered and temporal depression is filled in one operation. For females who desire a more slender face, we suggest the method of correcting the temporal depression by liposuction with small amounts of fat.

The use of liposuction in addition to fat injection is benefit for correcting temporal depression in Asian patients. Satisfactory aesthetic results are achieved. Additionally, it decreases the demand for grafted fat.

Conflicts of interest

None.

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